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Graduate School

1915-1916 ✓

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GRADUATE SCHOOL
OF THE
STATE UNIVERSITY OF KENTUCKY
FOR THE
SESSION ENDING JUNE 8, 1916



THE UNIVERSITY PRESS
LEXINGTON, KY.

THE GRADUATE SCHOOL.

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Names and Addresses.

Term Expires.

JAMES BREATHITT, Hopkinsville

January, 1916

THOMAS LEWIS EDELEN, Frankfort

January, 1916

CHARLES B. NICHOLS, R. F. D., Lexington

January, 1916

JAMES K. PATTERSON, Lexington

January, 1916

JAMES W. TURNER, Paintsville

January, 1916

ROBERT W. BROWN, Louisville

January, 1918

TIBBIS CARPENTER, Scottsville

January, 1918

WILLIAM H. COX, Maysville

January, 1918

DENNY P. SMITH, Cadiz

January, 1918

CLAUDE B. TERRELL, Bedford

January, 1918

JOHNSON N. CAMDEN, Versailles

January, 1920

RICHARD C. STOLL, Lexington

January, 1920

LOUIS L. WALKER, Winchester

January, 1920

RICHARD N. WATHEN, Lebanon

January, 1920

DR. A. GATLIFF, Williamsburg

January, 1920

ELECTED BY THE ALUMNI.

DR. SAMUEL BLACKBURN MARKS, Lexington

December, 1916

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December, 1916

GEORGE GREEN BROCK, London

December, 1918

JOHN EDWIN BROWN, Shelbyville

December, 1920

PHILIP PRESTON JOHNSTON, Jr., Lexington

Decemder, 1920

THE GRADUATE SCHOOL.

A. S. MACKENZIE, DEAN.

GENERAL INFORMATION.

Organization.

For a number of years several Departments have offered advanced work leading to a Master's degree in Arts and Science or to a second degree in Engineering. At its annual meeting in May, 1912, the Board of Trustees of this University, acting upon the suggestion of the President, formally authorized the organization of a Graduate School, and thereafter the President appointed an Executive Committee, whose chairman is the Dean. The Graduate School has exclusive control of all graduate work done in the University.

Facilities.

The scientific laboratories are the best equipped in the Commonwealth, some of them comparing favorably with those of similar institutions in the Middle West.

The libraries comprise the General Library, the Agricultural, Engineering and Law Libraries as well as those of the various departments of the College of Arts and Science. Graduate students may also consult the public libraries of Lexington, Louisville and Cincinnati. Arrangements are being made whereby the extensive collections of some of the older institutions of learning may be freely consulted.

Even now, however, students find that one of the chief assets of the Graduate School is the opportunity for direct supervision of their work by men who have been trained and recognized by Universities such as Cornell, Edinburgh, Glasgow, Goettingen, Harvard, Johns Hopkins, McGill, Oxford, Pennsylvania, Purdue, Wisconsin and Yale.

As far as possible, it is intended to institute Fellowships exclusively for worthy students who are pursuing a regular line of work in the Graduate School.

Aims.

Every person in Kentucky or elsewhere, provided he has the aptitude and the necessary training, is welcomed to the Graduate School.

The object of undergraduate training is to enable the student to survey with understanding and enthusiasm the field already partially explored and to give him some appreciation of the problems that await solution. The object of the Graduate School is to make sure that the field of the known has been surveyed with reasonable thoroughness and then to guide the student toward the mastery of some really worthy problem that may render the general body of ascertained knowledge more intelligent.

In other words, for years the student, as his very name implies, indulges in search before he attempts research, and many a man secures his bachelor's degree who is innocent of that poise, that undying mental curiosity and brain power which are requisite in the critical study of achieved results or in any serious investigation. It is the purpose of this school to establish a reputation for sane scholarship, and to maintain without pretentiousness a standard of enlightened specialization so far as our means and intelligence permit.

Candidacy and Residence.

1. Candidates for a higher degree, whether resident or non-resident, will first communicate with the Dean of the Graduate School.

2. No graduate students will be regarded as candidates for a degree, unless admitted to candidacy by the Executive Committee of the Graduate School.

3. Registration for study in absence is permissible only to accepted candidates for advanced degrees. Residence wherever a student may be directed by the Graduate School Committee to prosecute systematic investigation is regarded as residence at this University.

4. No summer work will at present be recognized unless such work is prearranged with the Dean of the Graduate School.

5. Every graduate student in residence, whether a candidate for a degree or not, must be in actual attendance on at least one regularly authorized course of instruction; and this attendance must amount to at least four hours a week exclusive of thesis work.

6. Prior to matriculation all prospective graduate students, resident or non-resident, must receive the sanction of the Graduate School Committee. Prior to the assignment of work each student will submit a receipt from the Registrar showing that the fee of \$15.00 has been paid.

7. Every graduate student who is a candidate for a higher degree must file with the Secretary of the Graduate School, at least eight months before the time proposed for examination, a detailed schedule of studies on which the candidacy is based.

REQUIREMENTS FOR DEGREES.

The Master's Degree

1. For major work the course or courses must be strictly graduate courses. The minor or minors may be such courses as will best contribute to the efficiency of the major study.

2. The student must be in residence at least one year, or for three summer terms, in courses approved by the Graduate School Committee. Non-resident students, who are candidates for a Master's Degree *in absentia*, will do at least three years' work, part of which must be spent at this University in consultation and examination. Instructors under whom graduate work is being done will in January and May of each year submit to the Committee a report of work done by the candidate as well as the outcome of the examination in residence. At any time a candidate may be debarred from the privileges of the Graduate School for inefficiency. At stated intervals all resident students will appear for consultation before the committee.

3. In every instance the thesis, typewritten or printed, must be approved (a) by the major professor, (b) by the Graduate School Committee.

4. The corresponding bachelor's degree must have been taken before a candidate in residence may hope for the master's degree. For instance, if a Bachelor of Science desires the degree of Master of Arts he must make up all the necessary undergraduate work before he can be regarded as a regular member of the Graduate School. No bachelor of arts from any institution, however exalted, can become a candidate for the degree of A.M., unless he has studied Latin in a satisfactory manner. These degrees are given, in no case, *honoris causa*.

5. At least thirty days before the date when second degrees are conferred, each candidate must submit a thesis in accordance with Rule 3 preceding.

Degrees in Engineering.

1. A candidate for the degree of Civil Engineer must hold the Bachelor's degree from the College of Civil Engineering of this University, or he must have pursued successfully at some reputable institution a course of study equivalent to the degree of B.C.E. conferred by this University.

2. A candidate for the degree of Mechanical or Electrical Engineer must hold the Bachelor's degree from the College of Mechanical and Electrical Engineering of this University, or must have pursued success-

fully at some reputable institution a course of study equivalent to the degree of B.M.E. conferred by this University.

3. A candidate for the degree of Mining Engineer must hold the Bachelor's degree from the College of Mines and Metallurgy of this University, or must have have pursued successfully at some reputable institution a course of study equivalent to the degree of B.M.E. conferred by this University.

4. Second degrees are conferred upon such graduates of the Colleges of Engineering of this University have been engaged in acceptable professional work away from the University for at least three years after receiving the Bachelor's degree, or upon graduates of this University or of universities of equal standing engaged in prearranged residence work at the University for at least one year after receiving the Bachelor's degree.

5. At least thirty days before the date when the second degrees in engineering are conferred, each candidate must submit a thesis which will satisfy (a) the major professor and (b) the Graduate School Committee.

The Doctor's Degree.

1. No student shall be enrolled as a candidate for a doctor's degree until he has been in residence as a graduate student for at least one year. This rule may be waived in the case of those who have taken the master's degree at another reputable university.

2. Candidates who hold the master's degree may complete the work required for the degree of Ph.D. within three years, although this is the minimum. This degree will not be conferred for faithful work merely, but for original and worthy investigation. No doctor's degree will be conferred for work done *in absentia* or *honoris causa*.

3. No student will be regarded as a candidate for the degree of Doctor of Philosophy who has not a good reading knowledge of French and German as well as any other language essential for the mastery of his special line of work.

4. The thesis must prove satisfactory to (a) the major professor, and (b) the Graduate School Committee. After it has received the foregoing sanction, the thesis will be printed, one hundred and fifty copies of which will be used for exchange with other university libraries.

DEPARTMENTS OF INSTRUCTION.

CHEMISTRY.

Professor Tuttle, Professor Maxson, Assistant Professor Daniels.

In the Department of Chemistry courses of study leading to the Master's degree are provided in Inorganic, Organic, Physical and Analytical Chemistry. Under the following heads a considerable choice of work is offered.

- 1g. Synthetic Inorganic Chemistry.
- 2g. Organic Chemistry.
- 3g. Physical Chemistry.
- 4g. Analytical Chemistry.

EDUCATION.

Professor Noe, Associate Professor Baker.

For courses in this Department open to undergraduates and graduates, see General college Catalogue, Courses 8, 12, 13, 14, 15.

16. Seminar in Educational Problems. Investigations of some problems in educational psychology and some practice in experimental education. The class will meet weekly for a two-hour session. Time to be arranged. (NOE)

17. Seminar in Administration and Supervision. The work will consist chiefly of individual studies and reports. The class will meet weekly for a two-hour session. Primarily for graduates. Time to be arranged. Thesis work by appointment. (BAKER)

ENGLISH AND COMPARATIVE LITERATURE.

Dean Mackenzie.

The following courses are for graduate students exclusively.

ENGLISH LANGUAGE.

1g. English Philology. Keltic and Norse elements in our language and their influence on syntax, orthography, etc.

2g. English Philology. Hebraic and Hellenistic traces in English syntax; loan word fallacies; the rise of Scots, etc.

3g. Comparative Philology. Elements of Gothic, Sanskrit or Hebrew compared with some modern languages.

4g. Textual Criticism. Dialects and literature of Middle English.

5g. Special Study. The instructor is ready to assist and advise competent students who may suggest plans of special study which receive official sanction.

ENGLISH LITERATURE.

6g. Literary Problems. Details will be arranged by consultation.

COMPARATIVE LITERATURE.

7g. Methodology.

8g. Bibliography of a Type.

9g. Origin of Poetry.

10g. Magic Songs and Hymnography.

11g. Special Study. Literary work, satisfactory to both student and instructor, may be determined by consultation with Dean Mackenzie.

GEOLOGY.

Professor Miller.

Professor A. M. Miller will gladly answer inquiries from prospective graduate students in Geology. Work may be arranged after consultation.

GREEK.

Professor Terrell.

8. Plato and Aristotle. Plato's *Republic* will be studied the first half year. A close and analytical study will be made of this famous work. Special attention will be given to Plato's ideas of education, socialism, attitude toward the fine arts and other points of striking interest. Lectures by the professor and papers by the students on special topics.

Aristotle's *Politics* will form the basis of the work in the second half year. This will be read in connection with the recently discovered constitution of Athens. These two courses will be a study in the science of Government and Politics as conceived by the two greatest Greek writers on these subjects. These two works are among the world's greatest classics on the subjects treated, and can never be out of date so long as human nature is constituted as it is.

HISTORY AND POLITICAL ECONOMY.

Professor Tuthill.

HISTORY.

Graduate students seeking the Master's degree must first complete the college courses numbered 1, 3, and 4, or their equivalents. They should also present one college course in the history of the United States, or a course which treats of American Government, such as Political Science 1. In addition, one or more foreign languages will be expected, according to the character of the courses attempted. The Department will encourage students from other institutions of learning to defer application for the higher degrees until the end of the first term. The following courses are available.

10. Pro-Seminar in European History. This consists of the reading, translation and study of a selected chronicle. Open to graduates only. Two hours per week for a half year.

8. The Teaching of History. Designed to take up special problems and aids in class-room work of high school and college. Open to seniors of the Department of Education and graduates. Two hours per week. Second semester.

POLITICAL ECONOMY.

Political Economy may be taken as a minor only. The following courses are offered:

13. Pools and Trusts. A study of agricultural and commercial agreements and court decisions thereon. Open to undergraduates who have completed courses 1 and 2, and to graduates. Two hours per week. First semester.

14. Statistics. A study of averages, weighting, criticism, and practical exercises. Two hours per week. Second semester.

POLITICAL SCIENCE.

3. Comparative Constitutional Law. A comparative study of the governments of the greater nations of America and Europe. Prerequisite, Political Science 1. Two hours per week. Throughout the year.

MATHEMATICS.

Professor Boyd, Professor Davis, Associate Professor Rees.

The following courses are available for graduate students. Some of the courses are open to undergraduates also, while others are for graduate students only. The courses are so planned that a graduate student may find plenty to occupy his time as a major for at least two years.

7. **Graphical Analysis and Determinants.** A study by graphical methods of the fundamental principles of analysis and a presentation of the elements of curve tracing. This is followed by a brief course in determinants. Lectures. Omitted in 1914-1915; to be given in 1915-1916. Three hours per week. First semester. (REES)

8. **Vector Analysis.** A thorough study of the algebra of vectors with numerous applications to line geometry and solid analytics. Also a brief introduction to the calculus of vectors with applications to differential geometry, mechanics and physics. Text: Gibbs-Wilson's *Vector-Analysis*. To be supplemented by lectures. Omitted in 1914-1915; to be given in 1915-16. Three hours per week. Second semester. (REES)

9. **Theory of Equations.** An introductory course given chiefly by lectures and based on some standard text. Given in 1914-15; omitted in 1915-16. Three hours per week. First semester. (REES)

10. **Advanced Analytics.** This course is designed to present the extended theory connected with conic sections and to serve as an introduction to a later course in the general theory of algebraic curves. Text: C. Smith's *Conic Sections*. Given in 1914-15; omitted in 1915-16. Three hours per week. Second semester. (REES)

11. **Differential Equations.** A study of the theory of ordinary and partial differential equations, with applications to physics and mechanics. Text-book work supplemented by lectures and reports. Text: Cohen's *Differential Equations*. Omitted in 1914-15; to be given in 1915-16. Three hours per week. Throughout the year. (DAVIS)

12. **Advanced Calculus.** A second course in calculus, affording a more critical view of the fundamental notions theorems and including the study of elliptic integrals and functions defined by definite integrals. Work based on the texts of Byerly and Williamson. Given in 1914-15; omitted in 1915-16. Three hours per week. Throughout the year.

(DAVIS)

13. **Projective Geometry.** This course provides a study of the content and the methods of modern synthetic geometry. It is also designed

as an introduction to a later course in geometric transformations. Text: Cremona's *Elements of Projective Geometry*. Omitted in 1914-15; to be given in 1915-16. Three hours per week. Throughout the year. (BOYD)

14. Teachers' Course. Given in 1914-15. Two hours per week. First semester. (BOYD)

15. Geometric Transformations. Homogeneous coordinates are first developed from the standpoint of anharmonic ratios. After this the projective transformations in the binary, ternary and quaternary fields are studied in order. Omitted in 1914-15; to be given in 1915-16. Three hours per week. Throughout the year. (BOYD)

16. Theoretical Mechanics. The customary course in the theory and problems of kinematics, statics and kinetics, it being the purpose to emphasize the mathematical side of the subject perhaps more than the practical. Offered for 1915-16. Three hours per week. Throughout the year. (BOYD)

17. Algebraic Curves. This course will be based on the works of Salmon and Wieleitner and will require a reading knowledge of French and German. Given in 1914-15. Three hours per week. Throughout the year. (BOYD)

18. White Mathematics Club. The Club meets once a week. A book is adopted for study each year, and the members of the club take turns in leading the discussion of assigned parts. In addition, talks on special topics of interest are presented. Graduate students are expected to attend regularly.

19. Thesis. Students doing thesis work meet the head of the department once or twice a week for consultation. (BOYD)

LATIN.

Professor Jones.

11. Roman Satire. The history of the development of satire will be traced and the following authors will be read in whole or in part: Ennius, Lucilius, Horace, Petronius, Persius, Seneca, Juvenal.

MODERN LANGUAGES.

Professor Zembrod.

FRENCH.

4. Romanticist Novel and Drama. The Romanticist Novel and Drama of the 19th Century will be studied. This will be offered to a class of

not less than six students. Prerequisite courses, French 2 and 3. Tuesday fourth hour, Friday at the third hour. Two hours per week. Throughout the year.

GERMAN.

7. 19th Century Novel and Drama. Prerequisite courses, German 5 and 6. Monday and Wednesday at the third hour. Two hours per week. Throughout the year.

PHILOSOPHY.

Professor Tigert.

4. Psychology. The purpose of this course is to investigate certain of the most important problems of abnormal psychology, such as the phenomena of dreams, hypnosis, spiritualism, etc. Students are encouraged to make independent investigations and to do original work along these lines. This work is not advisable for those who have not completed a course in normal psychology. Text-book: Jastrow's *Fact and Fable in Psychology*. Two hours per week, throughout the year.

5. Philosophy. This work is designed for those who desire to do advanced work in philosophy and it is essential that students should have completed one or more of the undergraduate courses before undertaking it. Here the student is introduced to the problems of philosophy proper, including metaphysics and epistemology. Under the former head, theories of cosmology, including atomism, theism, and pantheism are explained and discussed, together with the ontological doctrines of materialism, idealism, and dualism. Under the latter head, realism, phenomenalism, rationalism, and empiricism are examined with the view of forming a clear and consistent theory of knowledge. Students will be required to read the sources in connection with lectures. Text-book: Paulsen's *Introduction to Philosophy*. Three hours per week. First semester.

6. Ethics. This is a study of the first principles of moral science but is adapted for advanced students, especially as a continuation after completing course 5. It includes the exposition of the principles of right and wrong and endeavors to make a practical application of these. Virtues and duties are defined and discussed. Text-book: Paulsen's *System of Ethics*. Three hours per week. Second semester.

PHYSICS.

Professor Pence.

Professor Pence will receive students wishing graduate work in Physics, provided they have the necessary preliminary training.

AGRICULTURE.

Dean Kastle, Professor Matthews, Professor Garman, Professor Hooper, Professor Peter, Professor La Bach, Professor Good, Professor Roberts, Professor Healy.

In the College of Agriculture and in the Experiment Station, excellent opportunities are afforded the student to do graduate work in the following subjects: Soil fertility, soil physics and farm crops, dairying and poultry husbandry, animal nutrition and the feeding of live stock, the study of market classes of beef cattle, sheep and swine, agricultural chemistry, entomology, seed analysis and plant breeding, the cultivation, curing and grading of tobacco, food and drug technology, bacteriology and animal pathology, including studies in immunity, hog cholera, etc.

Deserving students who have graduated from the College of Agriculture are given every opportunity to pursue some special line of work in the Station, where they come in contact with investigators and men of high standing in the sciences pertaining to agriculture. As a rule students who have taken such work at the Station have secured good positions elsewhere. There is now a constant demand for men trained in the several branches of Station work. The graduate student in Agriculture may select any of the above subjects as a major study leading to the degree of Master of Science in Agriculture. Two or more minor subjects will be assigned. At least one year's resident work at the University will be required of candidates for the degree of Master of Science in Agriculture.

CIVIL ENGINEERING.

Dean Rowe.

Majors.

- a. Railway Location and Construction.
- b. Yards and Terminals.
- c. Motive Power and Rolling Stock.

- d. Railway Operation and Management.
- e. Metallic Arches.
- f. Bridge Design.
- g. Reinforced Concrete.
- h. Water Power Development.
- i. Engineering Jurisprudence.
- j. Sanitary Engineering.

Minors.

Minor subjects may be selected from Mechanical, Electrical or Mining Engineering subjects, or from the various departments in the College of Arts and Science.

MECHANICAL AND ELECTRICAL ENGINEERING.

Dean Anderson, Professor Frankel, Professor Freeman.

The College of Mechanical and Electrical Engineering is prepared to offer graduate courses in the following subjects: Steam Engineering; Electrical Power Engineering; Gas Engineering; Illuminating Engineering; Heating and Ventilating; Telephone Engineering; Mechanics of Engineering; Wireless Telephony and Telegraphy Engineering.

The advanced degree, M.E. (Mechanical Engineer), or E.E. (Electrical Engineer), may be obtained by a resident student one year after taking the degree B.M.E. from the State University of Kentucky, or any institution of equal requirements, provided he has done the work assigned him satisfactorily, passed his examination, and presented an acceptable thesis.

A non-resident student may obtain the degree of M.E., or E.E., three years after graduation, if he has been engaged in practical engineering work during that time, passes an examination, and presents an acceptable thesis. At least one year's notice must be given to the Dean of the Graduate School that graduate work is being done, and the work must be approved by the major professor and by the Graduate School Committee.

MINING AND METALLURGY.

Dean Norwood.

For the degree of Mining Engineer (E.M.) Ore Dressing, Milling, Coal Mining, Metal Mining, Mine Plant, Metallurgy, or Electricity Ap-

plied to Mining, may be selected as major study; and minor studies may be assigned from Civil Engineering, Mechanical Engineering, Electrical Engineering, Geology, Chemistry, Physics, Mathematics, Political Economy, English, Spanish or German.

For the degree of Mechanical Engineer (Met.E.) Metallurgical Mill Construction, Ore Dressing, Milling, Fuel Testing and Purchasing, Heat Treatment of Steel (practical study), Electrometallurgy, Alloys, advanced Metallurgy, (including steel and other metals), or some other approved problem in Metallurgy may be selected as major study; and minor studies may be assigned from Mining Engineering, Mechanical Engineering, Electrical Engineering, Civil Engineering, Physics, Mathematics, Pyrometry, Clay Burning, Electrolytic Refining, Economics, English, Spanish or German.

GRADUATE CLUB.

The Graduate Club has been organized to promote the spirit of fraternity and research among graduate students. It hopes to cooperate toward a national movement involving federation of all American graduate clubs.

FELLOWSHIPS.

The following fellowships, subject to the approval of the Board of Trustees and the President of this University, are appointments open to students of any reputable university, who desire to enter the Graduate School in order to pursue studies in a special department of learning. Prospective fellows must have already evinced a distinguished ability in their undergraduate work. The fellowships vary in value from \$200 to \$600 per annum.

All appointments to fellowships are made for one year only, though they may be awarded for a second year.

Arts and Science.

Two fellowships in Chemistry; two in English; one in History; three in Mathematics; each of which will bring a stipend of \$350 per annum. Each teaching fellowship involves from five to ten hours per week in the class room and the laboratory, the remainder of the time being devoted to studies in the Graduate School.

Engineering.

A research fellowship in Mechanical or Electrical Engineering,

whose value is \$600 per annum; a teaching fellowship in Civil Engineering to the value of \$300 or more per annum, and a teaching fellowship in Mining Engineering to the value of \$300 per annum.

Law.

A fellowship in Law which will bring a stipend of \$200 or more per annum.

Agriculture.

In addition it is expected that one or more fellowships will be offered in the College of Agriculture, for worthy students who intend to specialize in some phase of Agricultural work.

Wealthy Kentuckians or others who desire to develop leaders of thought, through the medium of this University, are respectfully urged to institute one or more fellowships or scholarships, which will be named for anyone whom they may designate. No more dignified or useful monument to the memory of a deceased relative can be conceived. This form of philanthropy is now in vogue in all civilized countries.

The Dean of the Graduate School will be glad to communicate with those who desire information as to details of the urgent needs of this progressive University. An endowment of \$10,000 is usually sufficient to establish a teaching fellowship or a scholarship, whose incumbent will have unusual opportunities of fitting himself to become a leader in the development of the Commonwealth of Kentucky. Each fellowship or scholarship will be administered in accordance with the directions of its founder.





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